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“Step Out From the Old to the New”

IS 831 (1979): Badminton Racket Frames [PCD 22: Sports Goods]



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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS : 831 - 1979

Indian Standard
SPECIFICATION FOR
BADMINTON RACKET FRAMES
(*Second Revision*)

UDC 685.634.24 : 685.626



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NEW DELHI 110002

July 1979



AMENDMENT NO. 1 AUGUST 1984

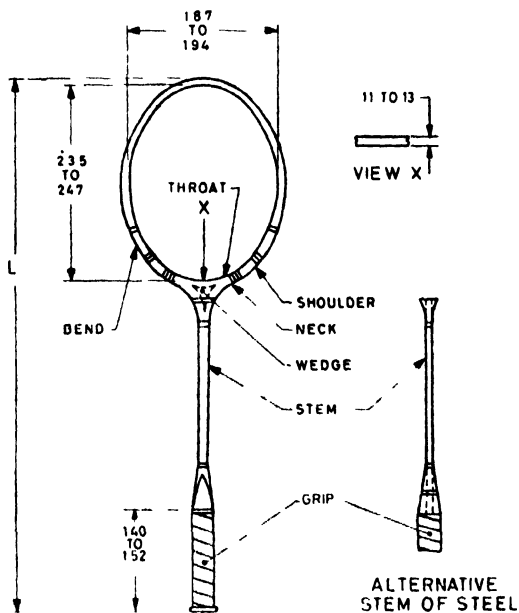
TO

**IS : 831-1979 SPECIFICATION FOR
BADMINTON RACKET FRAMES**

(Second Revision)

Alteration

(Page 6, Fig. 1) — Substitute the following for the existing figure:



For playing with shuttle cock, $L = 6601 \pm 3$

For playing with woollen ball, $L = 660$ to 675

All dimensions in millimetres.

FIG. 1 BADMINTON RACKET FRAME

(Pages 6 and 7, clause 6.1, third sentence) — Substitute the following for the existing third sentence:

‘Shoulders shall be reinforced with ‘U’ shape overlay which shall be bent and not cut to shape for Grade 1 and the overlay may be cut to shape for Grade 2.’

(CPDC 4)

Indian Standard

SPECIFICATION FOR BADMINTON RACKET FRAMES

(*Second Revision*)

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(*Continued on page 2*)

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Indian Standard
SPECIFICATION FOR
BADMINTON RACKET FRAMES
(*Second Revision*)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 9 January 1979, after the draft finalized by the Sports Goods Sectional Committee had been approved by the Consumer Products and Medical Instruments Division Council.

0.2 This standard was first published in 1957 and revised in 1966. The standard has been widely used and as a result certain changes became necessary and Amendment No. 1 was issued. In the second revision of this standard Amendment No. 1 has been incorporated, grades of the badminton racket frames have been redefined and the construction requirements have been modified to make them more specific.

0.3 Whereas rackets with wooden stems represent the bulk of demand experienced by the trade, rackets with steel stems have been in use for a large number of years and are coming increasingly into vogue. Though the manufacturer has been given choice to decide the species of timber and the particular type of steel for the stem, yet it may be emphasized that the joints of wooden and steel stems should be well-made and protected suitably from the ingress of moisture. Special care should be exercised for the choice of steel for the stem. In 3.2, only general requirements have been given for the steel stem.

0.4 This standard contains clauses 7.1 and 9.1 which call for agreement between the purchaser and the supplier and which permit the purchaser to use his option for selection to suit his requirements.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Rules for rounding off numerical values (revised).

1. SCOPE

1.1 This standard covers the material, dimensional and constructional requirements for the badminton racket frames.

2. GRADES

2.1 The badminton racket frames shall be of the following two grades based on the requirements given against each:

<i>Grade</i>	<i>Requirement</i>
1	Minimum five-ply (excluding veneer) laminated frame, having at least three plies of ash and two plies of beech with full ash or beech or mulberry overlay at shoulders
2	Minimum five-ply (excluding veneer) laminated frame, having at least two plies of ash and one ply of beech with half ash or beech or mulberry or maple or kharaoh overlay at shoulders

3. MATERIALS

3.1 The timber shall be straight-grained and fully seasoned. It shall be free from knots, cracks, open splits, decay and stains. The moisture content of the timber shall be between 10 and 14 percent.

3.1.1 Bends — The bend for Grade 1 frames shall be laminated from the timbers specified in 2.1. The bend for Grade 2 frames (*see 2.1*) shall be laminated out of the following timbers:

TRADE NAME	BOTANICAL NAME
ash	<i>Fraxinus</i> spp.
beech	<i>Fagus</i> spp.
birch	<i>Betula</i> spp.
hickory	<i>Carya</i> spp.
hornbeam	<i>Carpinus</i> spp.
maple	<i>Acer</i> spp.
rosewood	<i>Dalbergia latifolia</i> Roxb.
toon	<i>Cedrela toona</i> Roxb.
walnut	<i>Juglans regia</i> Linn

3.1.2 Handle — The handle shall be made out of the following timbers:

TRADE NAME	BOTANICAL NAME
gutiel	<i>Trewia nudiflora</i> Linn.
horse chestnut	<i>Aesculus indica</i> Colebr
poplar	<i>Populus</i> spp.
sycamore	<i>Acer pseudoplatanus</i>
toon	<i>Cedrela toona</i> Roxb.
willow	<i>Salix</i> spp.

3.1.3 Wedge — The wedge shall be made out of any of the following timbers:

TRADE NAME	BOTANICAL NAME
ash	<i>Fraxinus</i> spp.
beech	<i>Fagus</i> spp.
mulberry	<i>Morus</i> spp.
poplar	<i>Populus</i> spp.
rosewood	<i>Dalbergia latifolia</i> Roxb.
silver oak	<i>Grevillea robusta</i> A. Cann.
sycamore	<i>Acer pseudoplatanus</i>
toon	<i>Cedrela toona</i> Roxb.
walnut	<i>Juglans regia</i> Linn
willow	<i>Salix</i> spp.

3.2 Stem — It shall be made of hollow tapered steel tube, duly tempered and shall be suitably chromium plated or painted.

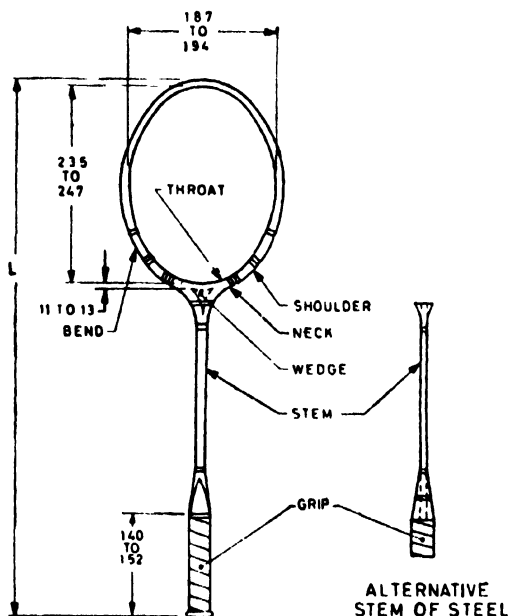
4. DIMENSIONS

4.1 Length — The full length of the frame shall be 660 ± 3 mm for play with shuttlecock and 660 mm to 675 mm for play with woollen balls (see Fig. 1).

4.2 Thickness of the Bend After Finish — The maximum and the minimum thickness of the bend after finish shall be 9 mm and 7 mm respectively.

4.3 Major and Minor Axes of the Bend — The major and minor axes of the bend shall be between 235 mm and 247 mm and between 187 mm and 194 mm respectively.

4.4 Holes — The number of holes for stringing the gut shall be between 66 and 72. The diameter of the holes shall be 2 mm.



For playing with shuttle cock, $L = 660 \pm 3$

For playing with woollen ball, $L = 660$ to 675

All dimensions in millimetres.

FIG. 1 BADMINTON RACKET FRAME

4.5 Grip — The grip of the frame shall be between 140 and 152 mm in length.

5. WEIGHT

5.1 The weight of the badminton racket frame for shuttlecock play shall be between 120 g and 156 g and between 156 g and 198 g for woollen ball badminton play.

6. CONSTRUCTION

6.1 All the plies shall be properly glued with cold-setting, synthetic resin adhesive (see IS : 851-1957*) and fitted securely one by one on the shaping clamps with the help of a gluing press to form proper bends.

*Specification for synthetic resin adhesives for construction work in wood.

Width of the crescent on the wedge point shall be 11 to 13 mm. Shoulders shall be reinforced with 'U' shape overlay which shall be bent and not cut to shape. The overlay may be of silver oak, ash, beech, mulberry, brimji, fibre or synthetic material. In the case of synthetic materials, it may be cast. The surfaces of the bends and the throat shall be thoroughly rounded or bevelled. The frame shall be ground smooth with sand-paper, polished with cellulose lacquer and trimmed attractively with different matching colour schemes. The handle shall be octagonal and covered with leather grips. All holes shall be countersunk from inside. Holes on the shoulder side, not less than one-third of the total number of holes, shall be counter-sunk from outside too. Edges of the holes shall be smoothly rounded off. The steel shaft when used shall be glued at each joint with the handle and the shoulder. In addition the steel shaft may be pinned at each joint for better performance, if considered necessary by the manufacturer.

7. MARKING

7.1 Unless otherwise required by the purchaser, the following information shall be clearly marked on the frame and the handle of each racket:

- a) Manufacturer's or supplier's name, initials or registered trade-mark;
- b) Grade; and
- c) Weight.

7.1.1 The badminton racket frames may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

8. PACKING

8.1 The badminton racket frames shall be packed in polyethylene or water-proof material.

9. SAMPLING

9.1 Sampling and acceptance criteria for badminton racket frames shall be as agreed to between the purchaser and the supplier. A recommended scheme for the same is given in Appendix A.

10. TEST

10.1 The racket shall be placed on a table and the handle pressed so that it rests evenly. The bend of the racket shall be square with the table and the height of the bend at various corresponding points on either side of the racket shall be equal. The racket shall be reversed and the test repeated.

A P P E N D I X A

(Clause 9.1)

**RECOMMENDED SAMPLING SCHEME AND CRITERIA
FOR CONFORMITY FOR BADMINTON
RACKET FRAMES**

A-1. LOT

A-1.1 In any consignment, all the racket frames of one grade, manufactured by the same firm, shall be grouped together to constitute a lot.

A-1.1.1 Each lot shall be tested separately to ascertain its conformity to the requirements of this standard.

A-2. SELECTION OF SAMPLES

A-2.1 Samples for test shall be selected at random from each lot in accordance with col 1 and 2 of Table 1.

TABLE 1 SAMPLE SIZE AND CRITERIA FOR CONFORMITY

(Clauses A-2.1 and A-3 4.1)

LOT SIZE (NUMBER OF FRAMES IN THE LOT)	SAMPLE SIZE (NUMBER OF FRAMES TO BE SELECTED)	ACCEPTANCE NUMBER*
(1)	(2)	(3)
Up to 15	3	2
16 „ 25	5	3
26 „ 40	7	5
41 „ 65	10	7
66 „ 110	15	10
111 „ 180	25	16
181 „ 300	35	22

*The number of defects observed in the test sample.

A-3. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-3.1 Each frame in the test sample shall be first examined for materials of construction as given in 3. In case any frame in the test sample is noticed to have been made of materials other than those specified, all frames in the lot shall be examined and those not conforming to the specification rejected.

A-3.2 If the frames are made of satisfactory materials, each frame in the test sample shall be tested for the constructional requirements as give in 6 and the test given in 10.

A-3.3 During testing any frame in A-3.2, each instance of its lack of conformity to the specification shall be considered as a defect of the frame. While examining any test sample, the total number and types of such defects shall be noted down.

A-3.4 A lot shall be accepted as conforming to the specification if the corresponding test sample satisfies the conditions of A-3.4.1 and A-3.4.2.

A-3.4.1 The total number of defects observed during testing as in A-3.3 shall not exceed the corresponding acceptance number given in col 3 of Table 1.

A-3.4.2 The total number of defects of any one type observed during testing as in A-3.3 shall be less than half the corresponding acceptance number.

INDIAN STANDARDS

ON

EQUIPMENTS RELATING TO BADMINTON

IS:

- 414-1965 Guts for tennis, badminton and squash rackets (*first revision*)
- 415-1978 Shuttlecocks (*second revision*)
- 827-1966 Sinew guts for tennis and badminton rackets (*first revision*)
- 831-1979 Badminton racket frames (*second revision*)
- 3345-1965 Sports nets
- 4973-1968 Badminton woollen balls

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

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Printed at Printograph, New Delhi, India.